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# Towards a harmonised framework methodology for the environmental assessment of food and drink products

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**Abstract**
*Introduction* "Food and drink" products are the basis of life. However, it is recognised that their supply also contributes to the environmental impacts associated with production and consumption. Recently, an increasing number of food chain partners and public authorities have introduced a widening range of initiatives to provide information about the environmental performance of food and drink products. These initiatives show a high degree of diversity in terms of their chosen scope, assessment methodologies and means of communication, which has the potential to confuse or even mislead consumers and other stakeholders. In this context, the European Food Sustainable Consumption and Production (SCP) Round Table was launched by food supply chain partners and the European Commission with the vision of promoting a

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science-based, coherent approach to sustainable consumption and production in the European food sector.
*Objectives* This article presents this European initiative by introducing its Guiding Principles and summarizing the proceedings of the scientific workshop held in Ispra on 14–15 June 2010. The aim of the workshop was to identify scientific inputs for developing the harmonised framework methodology for assessing the environmental issues of food and drink products. In this context, the main purpose was to provide a common understanding of what is involved in reliable and robust environmental assessments of the food chain, current limitations, and how to go from detailed assessments to more focused criteria, guidance and tools.
*Conclusion* The current experiences presented in the workshop demonstrate that much advancement has already been made towards the measurement and management of the environmental performance of food and drink products. Detailed methodologies and tools are already being used by various players. According to the workshop speakers, the definition of methodological choices concerning the functional unit, system boundaries, cut-off criteria, allocation rules and environmental impact categories are some of the key issues to be fixed in the harmonised framework methodology. The Round Table process has the potential to make a substantial contribution to the sustainable consumption and production of food and drink products. This model might be proposed and reiterated for other sectors as well.

**Keywords** European food SCP round table · Food · Harmonised Framework Methodology · Sustainable consumption and production

## 1 Introduction

Food and drinks are essential for the sustenance of life. Their supply significantly contributes to the consumption of resources and environmental impacts, as well as to our economy. This has recently been reiterated in several studies (Druckman and Jackson 2009; Huppes et al. 2006; EC 2006). To help address these issues, European sustainable consumption and production policies promote quantifying the environmental performance of food and drink product supply chains, communicating this information along the supply chain and to consumers and identifying opportunities for improvement (EC 2003, 2005a, b, 2008a). Additionally, an increasing number of food chain[1] partners and public authorities have introduced a widening range of initiatives to provide information about various environmental characteristics of food and drink products and to support continuous improvement (e.g. labels, statements, product declarations, etc.). For such initiatives, the chosen scope, assessment methodologies and means of communication are diverse, which could potentially confuse or even mislead consumers and other stakeholders. There is at present no commonly applied methodology to assess and communicate environmental information along the food chain, including to consumers, in a practical and reliable way.

In this context, the European Food Sustainable Consumption and Production (SCP) Round Table[2] was launched by food supply chain partners and the European Commission with the vision of promoting a science-based, coherent approach to sustainable consumption and production in the food sector across Europe, while taking into account environmental interactions at all stages of the food chain. In particular, the Round Table aims at establishing a scientifically reliable, practical and harmonised environmental assessment methodology for food and drink products across Europe—including, as appropriate, product category specifications—to form the basis for voluntary communication of environmental information along the food chain, including consumers.

Although initiated by the food chain, there are several reasons why the European Commission has decided to join the Round Table. First, the Round Table follows the philosophy of the EU Sustainable Consumption and Production Action Plan (EC 2008a), even though it is not part of the Action Plan. Indeed, the Round Table aims to establish the food chain as a major contributor towards sustainable consumption and production in Europe. Secondly, in March 2009, the High Level Group on the Competitiveness of the Agro-Food Industry, set up by Industry Commissioner Verheugen (EC 2009), recommended the European Commission to co-chair the Round Table. Thirdly, the European Commission supports any voluntary initiatives by the industry leading to the improvement of overall environmental performance of products and production processes, thus supplementing the relevant legislative framework. Finally, through simultaneously co-chairing the Round Table and the Retail Forum (EC 2010c), another multi-stakeholder platform for sustainability, the European Commission ensures complementarity and synergies between the two initiatives. While the Retail Forum is looking at SCP mainly from a retailer perspective, the Round Table focuses on issues related to the food chain.

This paper first presents the Round Table initiative and then summarizes the proceedings of the scientific workshop held in Ispra, Italy on 14–15 June 2010. The aim of the workshop was to provide the Round Table with an overview of the necessary scientific inputs for developing the harmonised environmental

[1] For readability reasons, the term "food chain" is used in this article as a synonym for "food and drink chain". It includes suppliers to the agricultural sector, agriculture, agro-food trade, food and drink processors, the packaging supply chain, transport and logistics operators, retailers and restaurants, consumers, including public procurers, and end-of-life operators.

[2] Hereon "Round Table"

assessment methodology for food and drink products. This article identifies potential areas for harmonisation that would contribute toward more consistent assessments of the environmental performance of food and drink products.

## 2 The European Food Sustainable Consumption and Production Round Table

In May 2009, twenty-three European associations[3] from nearly every stage of the food chain, with the European Commission as a co-chair, launched the Round Table with the support of the United Nations Environment Programme (UNEP) and European Environment Agency. The Round Table has since attracted the interest of several civil society organisations and national governments. The Round Table's vision is to promote a science-based, coherent approach to sustainable consumption and production in the food sector across Europe, while taking into account environmental interactions at all stages of the food chain.

The Round Table's unique structure, with the participation of all food supply chain members at the European level on an equal footing, enables it to take a harmonised, life cycle approach. A life cycle approach underpins all of the Round Table's objectives, which are the following:

- Identification of scientifically reliable and uniform environmental assessment methodologies for food and drink products, including product category specifications where relevant, considering their significant impacts across the entire product life cycle;
- Identification of suitable communication tools to consumers and other stakeholders, looking at all channels and means of communication;
- Promotion of and reporting on continuous environmental improvement along the entire food supply chain and engaging in an open dialogue with its stakeholders.

The Guiding Principles on the voluntary environmental assessment and communication of environmental information along the food chain, including to consumers (Table 1), are the first tangible outcome of the work of the Round Table (European Food Sustainable Consumption and Production Round Table, 2010). These Guiding Principles are instrumental to the development of the harmonised framework methodology for the environmental assessment of food and drink products, and form the basis of voluntary communication of environmental information along the food chain, including both business-to-business and business-to-consumers. The Guiding Principles aim to promote consistency among approaches applied across Europe and to facilitate the provision of environmental information that is scientifically reliable, consistent, understandable and not misleading, while being practical to use and focused, so as to enable informed choice.

[3] List of Round Table members: http://www.food-scp.eu/node/29

## 3 The Ispra scientific workshop

To support the objective of establishing the harmonised framework assessment methodology for food and drink products, the European Commission's Joint Research Centre, which co-chairs the working group on the environmental assessment methodologies, hosted a scientific workshop for the Round Table in Ispra (Italy) on 14–15 June, 2010. The purpose of the workshop was to provide a common understanding of what is involved in reliable and robust environmental assessments of the food chain, current limitations and how to go from detailed assessments to more focused criteria, guidance and tools. The workshop also defined a preliminary draft of the Road Map for developing the harmonised framework methodology, which identifies roles and tasks, expected deliverables and deadlines.

Experts were invited to present key insights from their activities and research related to the environmental assessment of food and drink products. The following sections summarise the presentations.

### 3.1 The policy context

Herbert Aichinger, European Commission Directorate-General for Environment, outlined the policy context of this initiative. The starting points of the debate are threefold:

- Unsustainable production and consumption patterns;
- Increasing consumption levels leading to increased environmental impacts. Decoupling between economic growth and environmental impacts has not yet been achieved;
- The rebound effect, where efficiency gains are offset by higher consumption rates.

Different studies have identified three main sectors being responsible for around 70% to 80% of all environmental impacts stemming from private consumption: food and drink products, mobility together with housing and construction (EC 2006, 2008b). This has been further supported by a recent publication of UNEP (UNEP 2010).

A key to reducing the environmental impact of products is improving resource efficiency, which is the new overarching concept for sustainability. Hence, resource efficiency, which means achieving more output with less input of raw materials, energy and other resources, is the main priority for European Environment Commissioner Janez Potočnik. It constitutes one of the seven flagship initiatives of the recently launched "Europe 2020" strategy for a smart, sustainable and inclusive growth in Europe. This concept will be integrated into virtually

**Table 1** The Guiding Principles of the Food SCP Round Table

| | |
|---|---|
| *Lead Principle* | |
| Environmental information communicated along the food chain, including to consumers, shall be scientifically reliable and consistent, understandable and not misleading, so as to support informed choice. | |
| I. Principles for the voluntary environmental assessment of food and drink products | |
| 1. | Identify and analyse the environmental aspects at all life cycle stages |
| 2. | Assess the significant potential environmental impacts along the life cycle |
| 3. | Apply recognised scientific methodologies |
| 4. | Periodically review and update the environmental assessment |
| II. Principles for the voluntary communication of environmental information | |
| 5. | Provide information in an easily understandable and comparable way so as to support informed choice |
| 6. | Ensure clarity regarding the scope and meaning of environmental information |
| III. Principles for both voluntary environmental assessment and communication | |
| 7. | Ensure transparency of information and underlying methodologies and assumptions |
| 8. | Ensure that all food chain actors can apply the assessment methodology and communication tools without disproportionate burden |
| 9. | Support innovation |
| 10. | Safeguard the Single Market and international trade |

all other policy areas, such as the Common Agricultural Policy, the Innovation Strategy and other industrial policies.

To address the environmental impacts of consumption, the EU launched an Action Plan for Sustainable Consumption and Production in 2008 (EC 2008a). Elements of the Action Plan include a broader scope for the Ecodesign Directive, targets and guidance on green public procurement, a revised Ecolabel and eco-management regulation and the creation of the Retail Forum to address current unsustainable consumption patterns. The Retail Forum addresses a wide range of issues such as optimisation of distribution and logistics, better energy efficiency, marketing and consumer information, sustainable timber and other cross-cutting topics.

### 3.2 Environmental assessment of supply chains, existing support and practical approaches

David Pennington, European Commission Joint Research Centre and Co-Chair of the Round Table Working Group on Environmental Assessment Methodology, stated that the questions to bear in mind are:

- How can we quantify the environmental performance of products?
- What is the basis for quality and coherence?
- How can we extend this basis to many products?

The Round Table is dedicated to using life cycle thinking. When examining food chain stages, issues such as energy, material scarcity, land and water use and climate change arise. Life cycle thinking is quantified through life cycle assessment, which has been supported from a European policy perspective by the Integrated Product Policy and Action Plan on Sustainable Consumption and Production and Sustainable Industrial Policy (EC 2008a).

International Organization for Standardization (ISO) 14040 and 14044 provide the general framework for quality and coherence for life cycle assessment (LCA). Developed under the umbrella of the commission's European Platform on Life Cycle Assessment, the International Life Cycle Database (ILCD) Handbook (EC 2010a) provides further detailed guidance and terminology. In 2011, the ILCD Data Network (EC 2010b) is expected to be launched and to contain related data from business associations, companies, the European Life Cycle Database, research projects, national databases and consultancies. Trade associations are encouraged to provide data to the ILCD Data network. The aim is that comprehensive LCAs that are ISO 14040/44 and ILCD compliant, as well as associated product-group tools, guidelines and criteria that may be more practical to use in many applications, can be used to support policies and strategic decisions within companies.

### 3.3 Comparing different agricultural practices through life cycle assessment: main issues and insights

Frank Brentrup, Yara International ASA, presented the way Yara, a Norwegian fertilizer company with global presence in production and distribution, uses the LCA methodology to assess the environmental impact of crop production with particular focus on fertilizers. Depending on the goals of the study, it is important to choose appropriate field trials as a basis. In order to compare different farming intensities, Yara has chosen a long-term field trial with winter wheat (Broadbalk Experiment, Rothamsted/UK). The grain yield at different nitrogen application rates was measured, and the optimum

fertilizer rate was identified. The LCA included raw material extraction, production and transportation of farming inputs (e.g. fertilizers and pesticides) and all on-farm activities (tractor use, etc.) needed to produce 1 tonne of wheat grain. Acidification, eutrophication, global warming, land use, resource consumption and energy use were the impacts considered.

To aggregate the environmental impacts into one index, Yara uses the "EcoX" approach, an aggregated environmental index based on the "distance-to-target" aggregation concept (Brentrup et al. 2004). The environmentally optimal application rate of fertilizers was slightly lower than the economically optimal level. The highest EcoX values were determined at over-optimal as well as at zero application of nitrogen fertilizer. LCA was also used to calculate the carbon footprint of different farming systems and fertilizer products. When considering the effects of potential land use change, the carbon footprint is lowest at the economic optimum N fertilizer application rate. There are two hot spots in the carbon footprint of wheat production: $N_2O$ emissions from the fertilizer factory and $N_2O$ emissions after application of N fertilizer in the field. Options for reducing $N_2O$ emissions and case studies of carbon footprints were presented. The LCA stops at the farm gate.

In conclusion, fertilizers are important to sustain optimum yields. LCA is a suitable methodology to measure and evaluate the impacts of fertilizers. The production of crops on existing agricultural land at optimum intensity has the potential to mitigate climate change. A reduction of nitrogen fertilizer below the optimum rate can increase the environmental impact per tonne in some cases, especially when considering land use effects. Improved fertilizer production technology and farm management practices can reduce the overall environmental impact of crop production.

### 3.4 Key considerations from LCA case studies in the food and drink sector

Professor Andrea Raggi, University "G. D'Annunzio" in Pescara, Italy, provided an overview of the main methodological issues related to food LCAs. This presentation was based on some preliminary results of the Eco-Management for Food Project co-funded by the Italian Ministry of Education, University and Research (EMAF 2010). The first observation is that the research question defines the objectives of an LCA case study (e.g. identify hot spots, improve environmental performance, support the development of new products, compare alternatives, etc.). Defining the question and the related objective is very important because it implies certain assumptions and influences the results.

A second point is that food has various functions, including providing energy and nutrients as well as a psychological function (e.g. taste). The functional unit should properly reflect one or several function(s) of a product (Foster et al. 2006). This is a critical issue especially when making comparisons. In many LCA studies, the functional unit was not properly identified, and there was no clear distinction between the functional unit and reference flow, i.e. the amount of product needed to fulfil the functional unit. The most common functional unit for food is mass. Other functional units include volume, portions and pieces of products (Schau and Fet 2008). These functional units are acceptable for stand-alone, single-product LCAs. When comparative LCAs are concerned, the same functions must be compared. On this basis, some studies make reference to the nutritional value (e.g. protein content, energy content or a combination thereof), economic value, emotional value and land area (Roy et al. 2009). A quality-corrected functional unit was also proposed (Schau and Fet 2008). Studies reach no conclusion on what should be the functional unit. Different functional units obviously produce different reference flows, thus affecting the final results of the study.

Third, the definition of the supply chain is important. A variety of system flow charts have been used. Many studies stop at the farm gate or at retail level. The consumer-use phase is often excluded, despite evidence that it may have significant impacts (Usva et al. 2009). Defining a system boundary means defining a boundary between the natural system and the technical systems. The choice of system boundaries, however, is always debatable, particularly with food production, where the inclusion of biological processes renders the distinction between technical systems and nature unclear (Schau and Fet 2008). Moreover, multi-functional processes (e.g. by-products, co-products) must be taken into account, and the way they are dealt with can significantly affect the LCA results. One option is to allocate environmental burdens among co-products by means of so-called allocation rules. These can be defined by physical parameters (e.g. mass) and by economic value. By applying a quality-corrected functional unit, the co-product allocation problem may be overcome for some food products (Schau and Fet 2008). Allocation is a critical issue. Standard principles would be preferred. Allocation, especially case by case, should be avoided as far as possible. Alternatives to allocation include detailing processes into sub-processes. System expansion is another alternative (Usva et al. 2009). These should be preferred.

Fourth, the impact assessment stage is of key importance. Categories mostly considered in food LCAs include energy use, global warming, eutrophication, acidification, tropospheric ozone formation and land use. Other impacts mainly related to agriculture include biodiversity, water use, toxicity impacts, erosion and landscape (Foster et al. 2006; Roy et al. 2009). Based on a "meta-review" of LCA food studies (Foster et al. 2006; Hospido et al. 2010; Roy et al. 2009; Schau and Fet 2008; Usva et al. 2009), general findings are that agriculture is the stage with the highest impact. Eutrophication is a significant impact from cultiva-

tion. Acidification and land use are also significant. There are diverse results of global warming. Animal products generally have a significantly higher energy use for production than plant foods. Impacts for packaging are diverse, depending on the materials used and end-of-life treatment options, which depend on local/regional factors. Long-distance transport may have important impacts (especially airfreight) (Sim et al. 2007).

Some conclusions are that further methodological development and standardisation are needed. Drawing general rules is difficult and not recommended (e.g. organic vs. conventional, local vs. globally sourced food). LCA studies can provide useful information along the supply chain but probably should be combined with other tools due to their limitations.

### 3.5 Key environmental issues of seafood production systems

SIK works on quantifying the environmental impact of food and drink supply chains. Friederike Ziegler, SIK, outlined the differences between seafood and other food, provided key environmental impacts and improvement measures and identified areas that require methodological developments.

As an example of the latter, SIK is currently developing indicators for the biological impacts of fisheries—impacts on stocks of target and by-catch species and on-seafloor habitats. Complemented by energy use and climate impact, these five categories altogether represent the environmental impact of seafood products originating in capture fisheries since many of the other typical LCA impact categories are often correlated and determined by fuel use in fishing. Therefore, key improvement options in capture fisheries are related to improving the fuel efficiency which can be achieved, e.g. by setting quotas at levels sustaining long-term yield of the target stock and promoting the use of or development of smart fishing methods. Key environmental improvement measures for aquaculture are related to optimising the production and use of feed. Regarding simplified rules, the Swedish organic label KRAV has introduced two rules in their criteria for seafood products from capture fisheries, one about on-board fuel use and one about the use of refrigerants on fishing vessels.

In conclusion, simplified criteria can be incorporated into existing eco-label schemes pointing out the direction for producers. However, more overall improvement is reached when even small improvements are achieved in the conventional food sector due to the much larger volumes. Due to the large importance of fishing (in analogy with agriculture in land-based food production), when a life cycle perspective is applied, sound fisheries management is a prerequisite for sustainable seafood production. High hopes are set on the reformed Common Fisheries Policy to be launched in 2012 to improve the situation, both for marine resources and fishermen in the European Union.

### 3.6 Current activities and methodological insights in assessing the environmental performance of Unilever's food and drink products

Unilever's mission for sustainability is to double the business while reducing the environmental impact. Unilever understands that their own manufacture accounts for less than 5% of the product, so it is important to take a life cycle approach. The challenges for Unilever include global supply chains, many partners along the supply chain, the need for more representative data and understanding of data variability, methodology issues (e.g. land use change, water footprinting) and greater understanding/modelling of the variability in consumer behaviour during the product-use phase. According to Nicole Unger, Unilever, it is also important to know why the LCA is being conducted and whether the results are going to be used externally or internally within the company.

Unilever uses four key metrics to track and manage its product portfolio; three product-based metrics, namely the GHG per consumer use (life cycle basis), water per consumer use in water-scarce countries, waste per consumer use (packaging and product waste minus what has been re-used, recycled or recovered) and a purchasing metric based on the volume of sustainably sourced materials. Unilever has recently completed a baseline assessment of it product portfolio in 2008 based on approximately 1600 products in sold in14 countries.

To support its internal programme Unilever has developed new approaches to applying LCA at a Brand and portfolio level as highlighted by its study on the Knorr global brand (Milà i Canals et al. 2011). This approach included taking a meta-product approach and enabled an assessment of variability as well as providing management insights. Together with ART in Switzerland Unilever has published the MEXALCA method (Roches et al. 2010) that enables LCA practitioners to model agricultural crop LCIs across different countries and to get an understanding of the potential variability.

Unilever is actively engaged in addressing the challenges of sustainable supply chain management and life cycle assessment of its products. In 2010 Unilever published a peer reviewed sustainable agriculture code which is supported by an IT tool to help farmers report their performance and it participates in initiatives such as the Roundtable for Sustainable Palm Oil to derive global certification standards. Unilever has also created a greenhouse gas (GHG) reporting tool known as the Cool Farm Tool specifically to assist farmers globally to understand and report their GHG emissions. In the area of method development, Unilever is collaborating in projects such as the UNEP/SETAC Life Cycle Initiative Working Group on Land Use, the EU project LC IMPACT, a research project with the University of Aberdeen to derive

operational land use change factors and in pilot projects with the Water Footprint Network.

### 3.7 Life cycle assessment and eco-design of packaging at Nestlé

Urs Schenker presented how Nestlé's environmental sustainability policy addresses packaging, stating that the key function of packaging is to guarantee the quality of the product it contains. Therefore, reduction of environmental impacts of packaging must not compromise this main function of packaging. Reducing environmental impacts of packaging is based on four elements, namely to reduce materials used, use materials with low environmental impacts (renewable sources), use recycled materials and encourage recycling.

An LCA for baby food packaging was presented (Humbert et al. 2009). The core indicators chosen were primary energy, global warming, respiratory inorganics and terrestrial acidification/nitrification. The LCA was peer reviewed by an expert panel. A key finding is that the timeline of full LCA studies is compatible with strategy development and long-term R&D objectives, but not well suited for eco-design in the product development and renovation process. In eco-design, results must be generated early in the product development process, since costs for change increase, and design freedom falls as the product development process advances.

For product development, a web-based eco-design tool has been presented, which greatly accelerates the eco-design process. The "Packaging Impact Quick Evaluation Tool", PIQET, has been developed for packaging design (see www.sustainablepack.org). PIQET reproduces the four phases of LCA as given by the ISO norms: (1) the goal and scope are pre-defined for packaging design supply chains. (2) The functional unit is a kilo of packaged product delivered to the retailer; the system boundaries encompass all phases of the packaging life cycle, including distribution of the packed/filled product. (3) Inventory data come from public databases worldwide. (4) Eight pre-defined indicators for impact assessment are provided, based on published LCIA methodologies. PIQET is well suited to compare different scenarios, which facilitates interpretation of LCA results. As an eco-design tool for packaging, PIQET also provides a means to standardise packaging design, prompt for and report non-LCA sustainability metrics for packaging and report design decisions against corporate sustainability goals.

To compare the reliability of PIQET with conventional LCA, Nestlé compared the results from over 300 scenarios from PIQET with screening LCA studies. In 77% of cases, PIQET produced the same trend as screening LCAs. Differences between PIQET and screening LCAs were due to different methodological choices (not always consistent between different screening LCAs) and data sources.

PIQET is well suited for use by non-experts and experts alike. It greatly reduces resources spent on LCAs and, therefore, is well suited for eco-design of packaging. Given the simplifications required for an eco-design tool, its flexibility necessarily is reduced (e.g. system boundaries, functional units, choice of inventory date). Therefore, screening LCA studies will still be required in some cases. Furthermore, as a streamlined LCA tool, PIQET is not appropriate for use in communication to consumers.

### 3.8 Going from detailed assessments to practical criteria: example of an LCA of olive oil to define eco-label criteria

Balázs Sára, FEBE Ecologic, presented a case study where the main goal was to re-qualify and to improve competitiveness of typical food products of small enterprises in the Romagna region in Italy. An idea was to strengthen and valorize environmental performance of the local DOP (Protected Designation of Origin)-labelled extra-virgin olive oil. LCA has been used to identify environmental "hot-spots" and to define aspects where criteria of a potential eco-label need to focus. The project was financed by the EU, coordinated by Local Action Group "L'Altra Romagna", and the LCA activity was supported by FEBE Ecologic environmental consultants.

Collecting data from small farms and mills was the first challenge. Involvement of companies was successful, thanks to their motivation to valorize and to promote their products as members of a consortium. Also, local agricultural experts were enlisted to help efficient data gathering, using tailor-made checklists.

Regarding data about production and use of fertilizers, a production company, SCAM SpA, with relevant LCA/EPD experience has been involved. This was a perfect opportunity for them to valorize their LCA/EPD activity and created collaboration for environmental assessment through the supply chain. To fill other lacks of data concerning fertilizers, pesticides and equipments, available GaBi databases were particularly useful tools.

Detailed identification of significant aspects for each participating company (life cycle phases, material or energy consumptions, emissions) has been followed by the definition of simple indications to project partners which aspects to focus on, with practical criteria. So it was found that quantities of fuel and fertilizer consumed at farming were the main relevant aspects that influence environmental impacts. As high fuel and fertilizer consumptions do not even necessarily mean higher productivity, it was clear for the consortium that environmental criteria should focus on these aspects. Presently the definition of limit values is the object of the discussion, and the companies still need to find an agreement that takes into consideration the age of cultivations and local conditions.

### 3.9 Review of the existing methods to assess the environmental performance of food and drink supply chains

Danone has a Nature Agenda 2008–2012, which focuses on measuring, setting an ambition, reducing, offsetting and communicating to consumers. Jean-Pierre Rennaud, who also co-chairs the Round Table Working Group on Environmental Assessment Methodology, stated that Danone has assessed the carbon footprint of its products and will conduct water and biodiversity footprints. An internal tool has been developed and is available to providers. The first step is to calculate the footprint at product level, then brand level, division level, company level and global group level. The end-of-life of the product and packaging are included. The ambition is to reduce $CO_2$ emissions by 30% of 2008 levels by 2012 and to achieve carbon neutrality after 2012. Data are necessary to measure impacts and progress. It is important to have principles on methodology, calculation tools and indicators so that data can be provided in a harmonised way.

Danone has been involved in the French public–private initiative to develop an eco-footprint methodology for consumer goods under the so-called Grenelle 2 law. The French food and drink industries and retailers' (ANIA-FCD) experience has shown that data availability, methodology design, cost and the definition of categories are important to solve. Other issues include biogenic carbon, cut-off rules, electrical mix, allocation of co-products and allocation of recycling benefits. Data collection for raw material waste is a challenge, and recycling data must be reviewed. The French experiment has found that it is difficult for some companies to provide data because of confidentiality issues. The procedure for verifying data must also be further discussed. In conclusion, the French initiative is advanced, but many methodological and practical aspects must be further developed and harmonised.

## 4 Conclusions

A coherent approach is needed to assess the environmental performance of the food chain from farm to fork to end-of-life. This requires a common understanding of what constitutes reliable and robust environmental assessments of the food chain and possible limitations. The Ispra scientific workshop was a contribution to this end as it provided an understanding of the experiences of actors along the food chain.

Current experiences of food chain actors demonstrate that much advancement has already been made towards the measurement and management of the environmental performance of food and drink products. Detailed methodologies and tools are already being used by various players all along the chain. A remaining challenge is the uncertainty about what methodological choices have been made along the food chain and about the assumptions and data built into existing tools. Another challenge is the complexity of the environmental aspects of food and drink products along the life cycle, including, inter alia, naturally occurring processes at farm level. The speakers suggested that harmonising methodological choices along the food chain should be the first step, such as the definition of the functional unit, system boundaries, allocation rules and environmental aspect and impact categories. There are also areas for further methodological improvement such as understanding data variability of bio-based production systems. As a later step, the harmonisation, availability and verification of robust data in databases should be considered. There was also a broad consensus that general rules that may not be supported by science should be avoided (e.g. “eat local”). However, it may be possible to establish rules or guidelines if there is an agreed scientific consensus (e.g. fuel limits in fisheries).

The Road Map is currently being finalised and sets out the Round Table's next steps for the development of the harmonised framework methodology: a detailed analysis of existing and emerging methodologies and initiatives, drafting the harmonised framework methodology, public consultation and revision. The results of the Ispra scientific workshop are a first contribution to the analysis. International initiatives are also being taken into account, such as the Sustainability Consortium's initiative in the United States. Beyond the Round Table, future steps for the harmonised framework methodology may include implementation and testing, fine-tuning and the provision of guides, tools, criteria and data sets.

The Round Table process has the potential to make a substantial contribution to the sustainable consumption and production of food and drink products in Europe through its promotion of voluntary harmonisation and continuous improvement. It could therefore become a model for other sectors as well. The European Commission believes that, through this process, a continuous environmental improvement of food and drink products could be attained, with evident benefits for consumers, industry and the environment.

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